

VoIP JURISDICTIONAL ANALYSIS

In this proceeding the Commission is considering the proper jurisdictional classification for Voice over Internet Protocol (“VoIP”) services. Unlike circuit switched services that provide a continuous connection of a circuit for a call between the end users, VoIP sessions utilize packets that traverse numerous paths and communicate with multiple databases.¹ Moreover, VoIP subscribers are no longer geographically tied to a specific location but are able to connect to their VoIP service at any location that has a broadband connection.² There is no question that the Communications Act of 1934 (“Act”) grants the Commission jurisdiction over the interstate components of VoIP. The jurisdictionally inseverable nature of VoIP communications, however, also vests the Commission with authority to preempt state regulation and to exercise exclusive jurisdiction over all VoIP communications. Indeed, in order for the Commission to fulfill its duties under the Act to increase competition and to promote the deployment of advanced telecommunications capabilities, it must exercise jurisdiction over all VoIP services.³

¹ It is increasingly misleading to refer to VoIP communications as calls. Like Internet subscribers, VoIP subscribers log on to the VoIP provider’s service. Once the subscriber logs on to the service, the VoIP session continues until the subscriber logs off. Like an Internet session, the subscriber can perform multiple tasks in a single session including voice communications, messaging communications, and e-mail.

² A VoIP provider does not know the location of the VoIP subscriber when the subscriber logs onto the VoIP service. The VoIP subscriber connects to his or her VoIP provider much in the same way an Internet subscriber connects to any site on the Internet. The VoIP subscriber transmits a domain name of the provider that is routed to a Domain Name Server (“DNS”). The DNS returns the IP address associated with the domain name that allows the subscriber to be routed to the IP address of the VoIP provider. The VoIP provider has no means of identifying the location of the subscriber. At most the subscriber will have an IP address; however, the IP address is generally that which the broadband provider assigns and can change from session to session. Further, the IP address itself does not have any geographic significance.

³ Section 706 of the Telecommunications Act of 1996, Pub. L. 104-104, 110 STAT. 56 (1996), reproduced in the notes under 47 U.S.C. § 157.

The Commission's legal authority to assert exclusive federal jurisdiction, to the exclusion of any state jurisdiction, is found in the statute and has been preserved by numerous court decisions. The Act provides the Commission authority "[f]or the purpose of regulating interstate and foreign commerce in communication by wire"⁴ and provides that the provisions of the Act "shall apply to all interstate and foreign communication by wire . . . , which originates and/or is received within the United States."⁵ The Act defines communications by wire as "the transmission of writing, signs, signals, pictures, and sounds of all kinds by aid of wire, cable, or other like connection between the points of origin and reception of such transmission, including all instrumentalities, facilities, apparatus, and services (among other things, the receipt, forwarding, and delivery of communications) incidental to such transmission."⁶ Clearly, VoIP services fall within the definition of "communications by wire" that the Commission is authorized to regulate.

Although the Act is premised on a dual paradigm with distinct spheres of state and federal jurisdiction whereby states are vested with regulatory authority over certain matters related to intrastate communication,⁷ there are nonetheless circumstances in which the state and interstate aspects of a communication cannot be segregated into their jurisdictional components. Federal jurisdiction is preeminent when the jurisdictional components are inseverable. For example, while special access service is capable of transmitting both interstate and intrastate communications, the Commission has determined that it is impractical to identify and measure intrastate and interstate use of such dedicated services. Accordingly, the Commission preempted

⁴ 47 U.S.C. § 151.

⁵ *Id.* § 152(a).

⁶ *Id.* § 153(52).

⁷ *See id.* § 152(b).

state regulation of intrastate communications over such services when more than ten percent of the total use of the service is related to transmitting interstate traffic.⁸ As discussed fully below, the dynamic capabilities of the IP-enabled services render it impossible to segregate intrastate from interstate components of the communication. Accordingly, the Commission has the authority and, indeed, the obligation to preempt state regulation of VoIP services.

The Law of Federal Preemption

The law is clear that when the interstate and intrastate components are inseverable, such as with traffic for VoIP services, the Commission has authority to exercise exclusive jurisdiction over the matter. The courts have long recognized the Commission's authority to exercise its jurisdiction over all inseverable components on the network. In the *North Carolina Utilities Commission* ("NCUC I" and "NCUC II") series of cases,⁹ several state commissions had prohibited customers from connecting privately owned phones to the network unless the phones were used exclusively for interstate purposes. The Commission preempted these regulations as interfering with its federal policy of allowing customers to use their own equipment in an effort to open competition in the equipment market. The state commissions appealed, citing Section 2(b) of the Communications Act¹⁰ as giving them jurisdiction over intrastate matters. The Fourth Circuit upheld the Commission's preemption order, finding that if the state regulations were allowed to remain in effect "the Commission [would] be frustrated in the exercise of that plenary

⁸ *In the Matter of MTS and WATS Market Structure, Amendment of Part 36 of the Commission's Rules and Establishment of a Joint Board*, 4 FCC Rcd 5660 (1989).

⁹ *North Carolina Utils. Comm'n v. FCC*, 537 F.2d 787 (4th Cir 1976) ("NCUC I"); *North Carolina Utils. Comm'n v. FCC*, 552 F.2d 1036 (4th Cir. 1977) ("NCUC II").

¹⁰ 47 U.S.C. § 152(b).

jurisdiction over the rendition of interstate and foreign communications services that the Act has conferred upon it.”¹¹ The Court went on to state

We have no doubt that the provisions of section 2(b) deprive the Commission of regulatory power over local services, facilities and disputes that in their nature and effect are separable from and do not substantially affect the conduct or development of interstate communications. But beyond that, we are not persuaded that section 2(b) sanctions any state regulation, formally restrictive only of intrastate communication, that in effect encroaches substantially upon the Commission's authority under sections 201 through 205.¹²

All courts that have addressed Commission preemption authority have affirmed the Commission's jurisdiction when the components of intrastate and interstate regulation are inseverable. In *Louisiana Public Service Commission v. FCC*,¹³ the Commission prescribed depreciation rates over equipment and preempted state commissions' application of their own depreciation rates for intrastate facilities. Although the Supreme Court reversed the Commission's preemption of the state rates, finding that the states had authority to prescribe their own rates under section 2(b), the Court distinguished, and implicitly affirmed, the inseverability doctrine established by the Fourth Circuit. The Court stated that the *NCUC I* and *NCUC II* cases involved upholding “FCC preemption of state regulation . . . where it was *not* possible to separate the interstate and the intrastate components of the asserted FCC regulation.”¹⁴ The Supreme Court's approval of the inseverability doctrine continues to be

¹¹ *NCUC I*, 537 F.2d at 793.

¹² *Id.*

¹³ *Louisiana Pub. Serv. Comm'n v. FCC*, 476 U.S. 355 (1986).

¹⁴ *Id.* at 375 n.4.

applied by courts¹⁵ and the Commission¹⁶ and, as the discussion below demonstrates, is applicable to VoIP services.

VoIP Services Are Jurisdictionally Mixed and Inseverable

The development of the law demonstrates that the concept of dual federal and state jurisdiction over communications services is predicated on the ability to identify separately intrastate and interstate communications. Further, dual jurisdiction presumes that interstate communications occur discretely from the intrastate communications so that state regulation of the intrastate communications does not interfere with the Commission's preeminent jurisdiction over interstate communications. Thus, the foundation of dual jurisdiction lies on the fact that

¹⁵ See *Pub. Util. Comm'n of Texas v. FCC*, 886 F.2d 1325, 1334 (D.C. Cir. 1989) (citing *Louisiana Public Service Commission*, court found that the Commission's preemption of state commission reasonably treated case as one which "it was *not* possible to separate the interstate and intrastate components of . . . [its] regulation"); *NARUC v. FCC*, 880 F.2d 422, 429 (D.C. Cir. 1989) (the Commission has preemptive jurisdiction when a state's exercise of authority over intrastate communications negates the Commission's lawful exercise of its authority over interstate communications); *California v. FCC*, 39 F.3d 919, 932-33 (9th Cir. 1994) (the Commission can lawfully preempt state regulations on local exchange carrier provision of enhanced services where dual regulation would not be "economically or operationally feasible"), *cert denied*, 514 U.S. 1050 (1995).

¹⁶ See *Amendments of Parts 2 and 22 of the Commission's Rules to Allocate Spectrum in the 928-941 MHz Band and to Establish Other Rules, Policies and Procedures for One-Way Paging Stations in the Domestic Public Land Mobile Radio Service*, General Docket No. 80-183, RM Nos. 2365, 2570, 3047 & 3068, *Memorandum Opinion and Order on Reconsideration (Part 2)*, 93 FCC 2d 908, 922, ¶ 35 (1983) (inseparability doctrine requires states to "stand aside when . . . it is technically and practicably impossible to separate the two types of communications [interstate and intrastate] for tariff purposes"); *Petition for Emergency Relief and Declaratory Ruling Filed by the BellSouth Corporation*, *Memorandum Opinion and Order*, 7 FCC Rcd 1619, 1623, ¶ 22 (1992) ("given the practical jurisdictional inseverability of BellSouth's voice mail service for purposes of implementing the state action here at issue, we preempt the Georgia PSC's 'freeze' of BellSouth's offering of voice mail service"); *GTE Telephone Operating Cos.; GTOC Tariff No. 1; GTOC Transmittal No. 1148*, CC Docket No. 98-79, *Memorandum Opinion and Order*, 13 FCC Rcd 22466, 22481, ¶ 28 (1998)("[u]nder the inseverability doctrine, pre-emption of state regulation is permissible 'where it is not possible to separate the interstate and the intrastate components of the asserted FCC regulation'" (citations omitted)).

each communication takes place in sequence – an intrastate call is made and completed before an interstate call is made and completed.

IP-enabled communications do not fit within the traditional bounds of communications services. As the record in the IP-enabled rulemaking shows, IP-enabled services are comprised of technically integrated packages of a multitude of communications functionalities, depending on the specific IP service. In the case of VoIP services, these functionalities are typically delivered by using a collection of IP gateway and IP routers (performing packet routing and TDM-IP protocol conversion functions) and IP feature servers (i.e. network computers and databases), including messaging servers, voice calling feature servers, media servers, e-mail servers, and conference servers, all of which are controlled by the VoIP provider and interconnected with an IP packet-based-softswitch that the VoIP provider uses to provide the control signaling that ensures delivery to the VoIP customer of the appropriate IP feature functionality and voice call routing associated with each VoIP session. These feature servers need not be physically located together in the same state, and frequently are not located in the same state as the subscriber of the IP-enabled service, since a centralized and interconnected feature server-softswitch equipment complex is all that is technically needed or typically can be economically justified by the VoIP provider to serve multiple IP customers located across several states. IP packet technology supports a distributed network, and thus permits IP service providers to offer and subscribers to access and use features that are housed in distant locations. Equally significant is that packets carrying intrastate components and interstate components can be delivered simultaneously on the same VoIP session to a VoIP subscriber.

To illustrate the mixed-use characteristics of VoIP services, the following scenarios are based on the type of architecture BellSouth intends to use to provide VoIP services. The

narrative below provides a side-by-side description of the VoIP subscriber's actions with the activities that are occurring in the VoIP network/platform.¹⁷ At the end of the white paper are three diagrams that illustrate the scenarios presented below.

¹⁷ The following abbreviations are used in the side-by-side narrative:

MS—Media Server – This element handles the manipulation of "media" (meaning voice/video) as opposed to messages sent back and forth between devices. The Media Server performs the role of a conference bridge, taking everyone's voices in, mixing them together, and sending them back to everyone. It also generates the voice prompts to tell a caller to leave a voicemail, converts voice mail files into voice when a user wants to hear their messages, plays Interactive Voice Response (IVR) instructions, and similar such applications where a user is interacting with a "computer-generated" voice as in the case of announcements.

FS—Feature Server – The Feature Server interacts with the end-user devices, controls call flows and features, and implements other applications. Generally, every end-device registers with the Feature Server; this registration process authenticates individual users who could be moving around, etc. The FS maintains the status of the connection (*i.e.*, on-hook, off-hook, etc.). Features like call waiting involve a message going from the end user to the FS, the FS sending directions to the softswitch and media gateways, and the new call being directed to the end user. The FS maintains the user preferences about which calls to admit, which to decline, which to route how, etc. It also maintains user call logs and presents those for review. Similarly, when "click-to-call" from Outlook is referenced, Outlook (or the webpage) actually sends a message to the FS saying "establish a call to this number" and the FS sets the communication. Generally, with the exception of specialized applications such as messaging and conferencing, the FS provides all application functionality to the end-user.

CB—Conference Bridge – The CB is the application server that delivers the conferencing application including authentication, logging, slide-sharing, web-based Graphical User Interface (GUI) controls, accounting, and scheduling. The MS is the actual "bridge" in terms of mixing voices together. The CB is actually an application running "on top of" the MS.

UM—Unified Messaging Application – The UM operates the voice mail/messaging application. While the MS physically captures the message and plays it back to people who want to hear it over the phone, the UM operates the messaging application including setting MWI (Message Waiting Indicator), pushing voice mails to people's e-mail accounts, synchronizing voice mail and e-mail, and converting e-mail headers to speech so that the subscriber can listen to the headers on the phone.

Enterprise Market Scenarios

Scenario 1 Branch Sales Meeting

| SUBSCRIBER ACTION | VOIP NETWORK |
|--|---|
| VP of Sales for the VoIP business subscriber arranges a conference session with three branch managers. VP of Sales is located in Georgia and the branch managers are located in Florida, South Carolina, and Georgia. All participants log on to VoIP service. | Each VoIP subscriber transmits a VoIP domain name over the broadband connection. The transmission is sent to a DNS that looks up the IP address of the Feature Server (FS) and returns the IP address to the subscriber. The subscriber transmits its request to the softswitch (SS). The Feature Server, which is located in Georgia, validates subscriber (e.g., user name, password); once the subscriber logged-on, all features of VoIP service are available to subscriber. |
| The conference session consists of audio and visual components. The participants will use their PCs to see the visual components on a web page and headsets/phones for voice communications. The Sales VP presents a slide presentation. | All participants connect to the VoIP Conference Bridge (CB) and Media Server (MS) over the IP network. The MS will mix all of the voice communications of the participants and transmit the mixed voice to each of the participants' locations. Simultaneously, the visuals are sent to the PCs of each of the participants via the MS and CB. |
| During the conference session, the Sales VP, as conference leader, can have a private VoIP conversation with one of the branch managers by pushing a mute button on his conference web page or can send an Internet message (IM) to the participants. | When the mute button on the web page is pushed, the CB instructs the MS to stop sending the mixed voice to the participant indicated by the conference leader. When indicated by the conference leader, the participant will be reconnected to the voice communication. |

Scenario 2
Sales Contact

| SUBSCRIBER ACTION | VoIP NETWORK |
|--|---|
| Salesman of VoIP business subscriber located in Georgia contacts client, also located in Georgia, about new discount schedule using voice component of VoIP service. | Salesman logs on to VoIP service. The VoIP platform is located in Georgia. The VoIP handset signals the FS with the telephone number of the called party. The FS communicates with the softswitch/gateway (SS/GW), which in turn establishes a connection to the called party. |
| When the salesman logs on to the VoIP service, all members of the salesman's workgroup including members located in other states are notified that the salesman has logged on and that he is engaged in a voice communication. | While the voice communication is being established, the FS updates all of the PCs in the work group indicating that the salesman is connected to the VoIP service and is engaged in a voice communication. When the voice communication is terminated, the PCs in the workgroup are updated to indicate that the salesman is available. |
| The salesman modifies his profile to send all voice communication to voice mail except for communications from his client. | Profile modifications are accomplished by the salesman using web pages that interact with the Feature Server. Incoming voice communications go from the SS to the FS. The FS screens the communications and routes non-client voice communications to voice mail and the MS where voice messages are recorded and forwarded to the salesman's e-mail account. |
| Salesman receives voice communications from the client. While speaking with the client the salesman IMs colleague located in South Carolina for information regarding proposed sale. Colleague IMs pertinent information to salesman who completes negotiations with client on sale. | The SS notifies the FS that client is attempting to establish voice communication with salesman. FS recognizes incoming information as associated with a person that the salesman wishes to communicate with. FS routes the voice communications to salesman's IP phone. IM messages between salesman and coworkers are routed by the FS. |

Scenario 3
Mass Market Scenario

| SUBSCRIBER ACTION | VoIP NETWORK |
|--|---|
| Homemaker VoIP subscriber located in Georgia initiates a voice communication to a relative located in Florida, selecting the called party from a contact list on the homemaker's PC. | Subscriber pulls up web page for VoIP service. The VoIP platform is in Georgia. On web page is address book application from which subscriber selects destination of voice communication. Subscriber's selection is sent from the PC to the FS to establish a voice connection to the called party. The FS signals subscriber's IP phone. When IP phone acknowledges FS signal, FS contacts SS/GW to complete call to called party. When called party answers, FS signals SS/GW to connect to subscriber's IP address and IP phone. |
| While subscriber is engaged in a voice communication, the subscriber's physician faxes a new prescription to the subscriber at the subscriber's IP telephone number. During the same VoIP session, the prescription reaches the subscriber by IP e-mail. | When the physician's office calls, a PC applet displays a notice of incoming communication to the subscriber. The subscriber, through the VoIP web interface, directs the incoming communication to the MS. The MS collects the fax and stores it in a database. The voice mail feature generates an e-mail and attaches the fax and sends it on to the subscriber's e-mail. |

These illustrations demonstrate the quintessential characteristic of the VoIP platform – the ability of the subscriber to perform simultaneously multiple communications tasks during a single VoIP session. Furthermore, to access and use the VoIP components, the subscriber need not be, and frequently is not, located in the same state as the VoIP platform. Indeed, the components of the VoIP platform need not be, and frequently are not, located in the same state. The subscriber (e.g., a sales representative) could use the voice component to communicate with another individual (e.g., a prospective sales client) located in the same state (typically considered intrastate) while at the same time review voice mail (in audio or text format) or e-mail messages (incoming simultaneously from the same or from other sales prospects) on his computer that are stored in and retrieved from databases located in another state (typically considered interstate).

The packets transmitting the intrastate and interstate communications during this single call session are intertwined and inseverable, both technically from a service design and provisioning standpoint, as well as from the VoIP customer's perspective.

The ability simultaneously to receive communications that are jurisdictionally mixed but jurisdictionally indistinguishable makes it impossible for federal and state regulation of IP-enabled services to coexist. Traditional jurisdictional markers have little or no meaning in an IP-enabled market place. Indeed, even a telephone number associated with a voice component of an IP-enabled service does not necessarily reflect the geographic location of the subscriber. An IP-service provider can give an Atlanta subscriber a telephone number that has the same NPA/NXX as a Los Angeles number.¹⁸ When the telephone number is dialed, the call is routed to the IP service provider's softswitch. The subscriber registers to his or her IP-enabled service using a broadband connection, and the broadband provider typically assigns an IP address associated with the subscriber's location. All communications between the VoIP platform and the subscriber during the VoIP session will be routed to the subscriber's IP address. The IP addresses, however, are not location-specific, and broadband providers typically reuse IP addresses such that a broadband customer that signs off the network is reassigned a different IP address the next time he or she signs on to the network. Furthermore, IP addresses themselves do not contain a geographic component. In addition, with the growing use of corporate IP-VPNs (IP Virtual Private Networks) and Network Address Translation ("NAT"), the geographic location of an IP address is further obscured. In other words, the IP address cannot be viewed as determinative of the location of the subscriber in all instances. Thus, there is no ready way to identify, even for the voice component of a VoIP service, where the subscriber of the VoIP

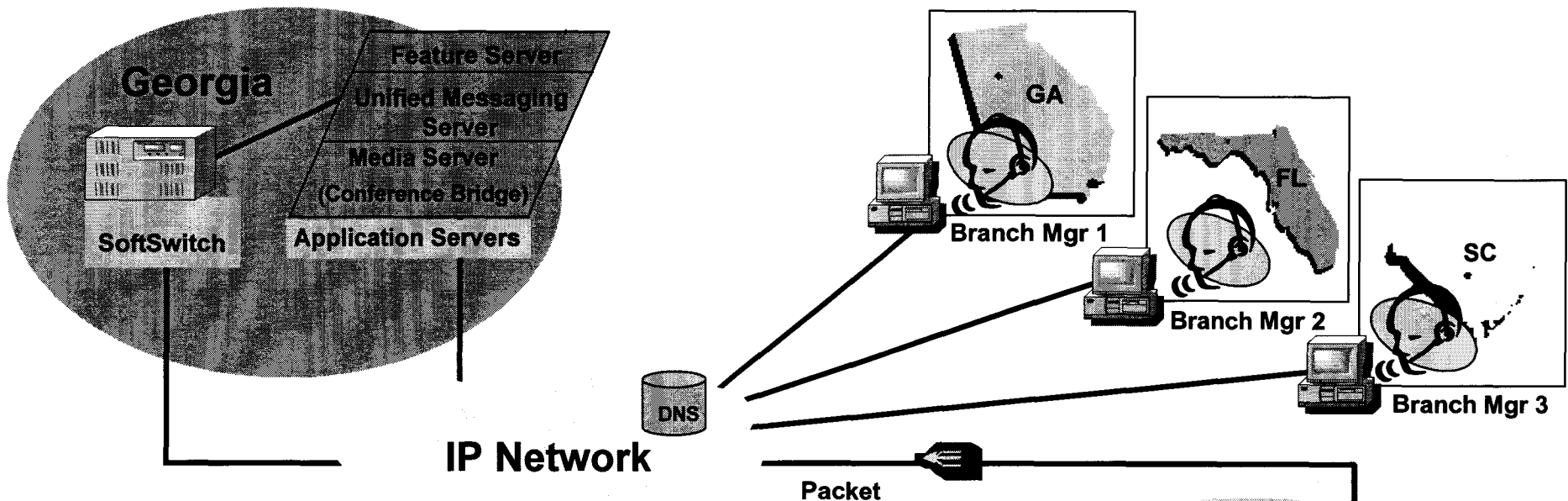
¹⁸ For example, Vonage permits its subscribers to choose any area code for their new DigitalVoice phone.

service is located for the purpose of determining jurisdiction. Coupled with the fact that a VoIP session can involve the simultaneous transmission of multiple information service components (*e.g.*, voice messaging, e-mail, web-based portal features), some, if not most, of which will be jurisdictionally interstate, it is evident that jurisdictional severability of IP-enabled services is impossible.

In these circumstances, the law is clear. The Commission has the authority to preempt state regulation and exercise exclusive jurisdiction. Indeed, it has the obligation to do so. The Act as amended by the Telecommunications Act of 1996 vests in the Commission the responsibility of promoting advanced telecommunications services and the Internet. The Commission must develop a national policy framework for VoIP in order to avoid continued, and possibly inconsistent, judicial construction of a statute for which the agency has the special expertise to construe, as well as potentially diverse and inconsistent state determinations.

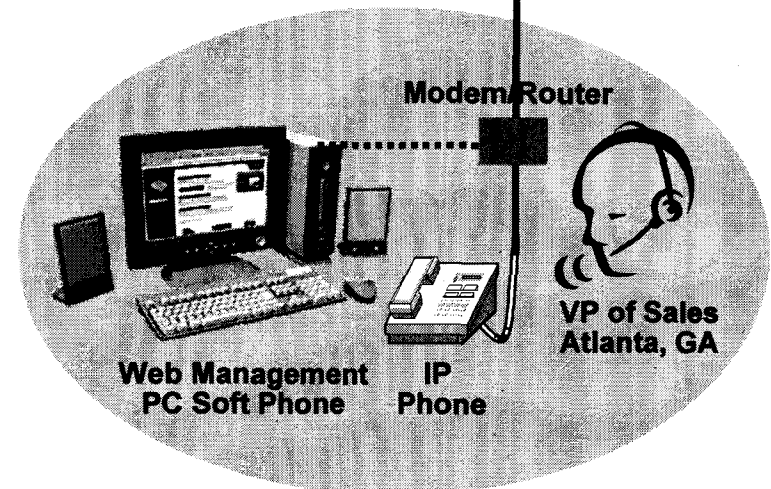
VoIP Branch Sales Meeting

scenario #1



The VP of Sales arranges a VoIP conference session with 3 of his branch managers to review monthly results. While the VP and one of his branch managers are located in GA, two branch managers are located in other states. All participants log on to VoIP service. The conference session consists of both audio and visual components. The participants will use their PCs to

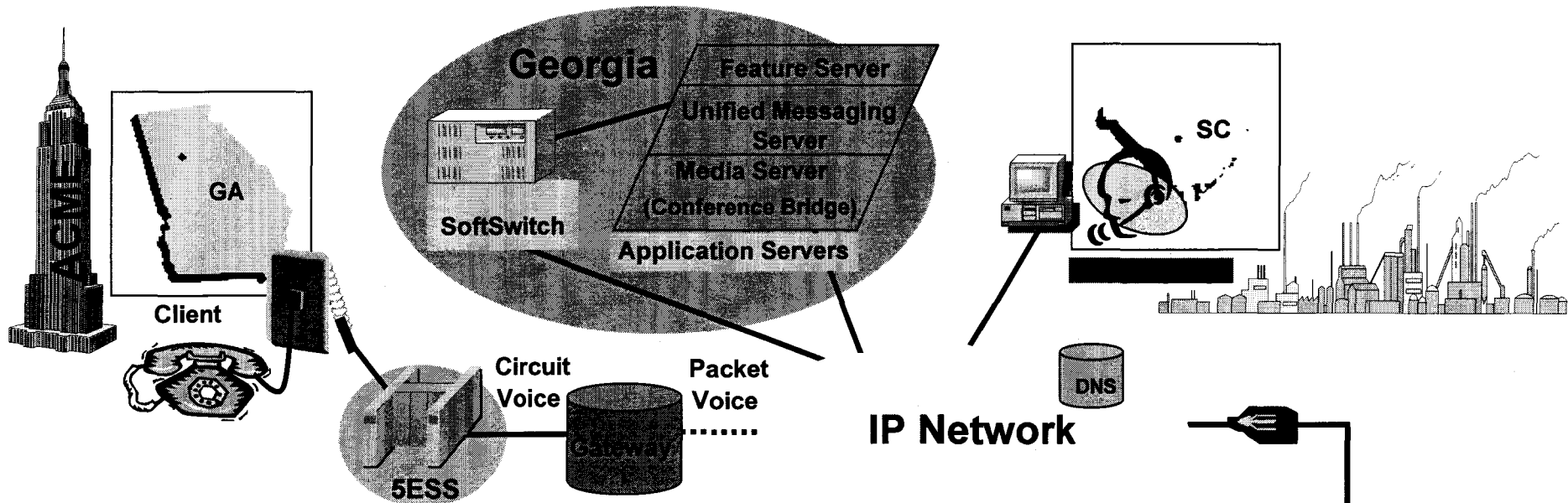
view the visual components on a web page and headsets/phones for voice communications. The Sales VP presents a slide show. During the conference session the VP of Sales, as conference moderator, can have a private VoIP conversation with one of the managers by pushing a mute button on his conference web page or he can send an instant message to the participants.



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VoIP Sales Contact

scenario #2



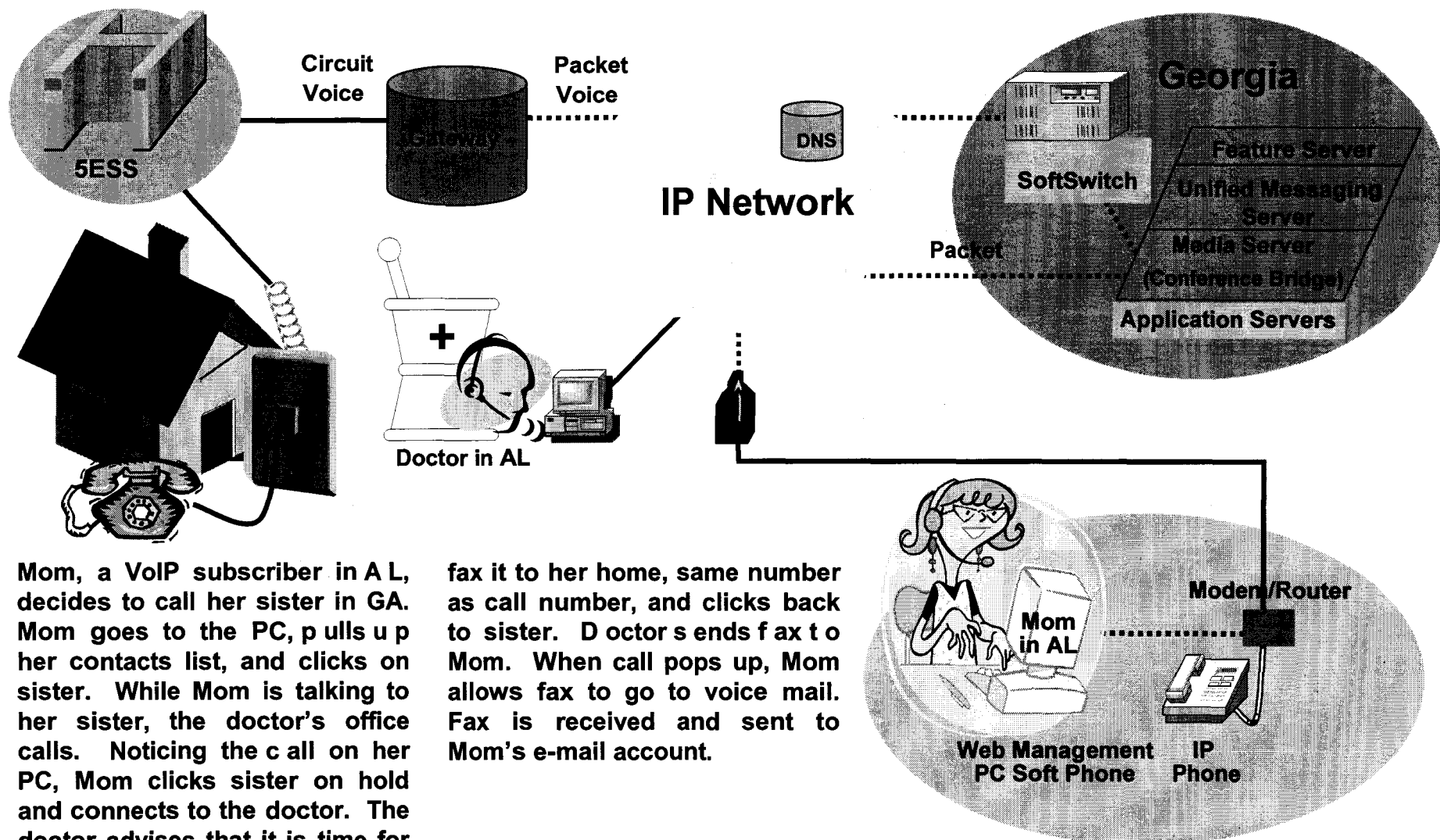
A salesman uses the voice component of VoIP service to leave a voice mail for a client about a new discount schedule. When the salesman logs on to the VoIP service, all members of the salesman's workgroup are notified. The salesman leaves a voice mail for his client and modifies his profile to divert all voice communication to his voice mail except for calls from

his client at ACME Company. The salesman receives voice communications from the client. While speaking with the client, the salesman instant messages shipping to request information regarding the proposed sale. The shipping manager instant messages inventory and delivery information to the salesman who is able to complete negotiations with the ACME client.

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VoIP Mass Market

scenario #3



Mom, a VoIP subscriber in AL, decides to call her sister in GA. Mom goes to the PC, pulls up her contacts list, and clicks on sister. While Mom is talking to her sister, the doctor's office calls. Noticing the call on her PC, Mom clicks sister on hold and connects to the doctor. The doctor advises that it is time for a new prescription. Mom says to

fax it to her home, same number as call number, and clicks back to sister. Doctor ends fax to Mom. When call pops up, Mom allows fax to go to voice mail. Fax is received and sent to Mom's e-mail account.

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